cholesteric liquid crystal cell responsive to said control signal when said first cholesteric liquid crystal cell reflects said circularly polarized light of said one state or transmits said incident light respectively.

2. (Original) The cholesteric liquid crystal cell unit of claim 1 further comprising a π-phase waveplate element between said first and second cholesteric liquid crystal cells.

3. (Original) The cholesteric liquid crystal cell unit of claim 2 wherein said π-phase waveplate element comprises a third liquid crystal cell.

4. (Original) The cholesteric liquid crystal cell unit of claim 2 wherein said π-phase waveplate element comprises a plate of birefringent crystal material.

5. (Original) The cholesteric liquid crystal cell unit of claim 1 wherein said first cholesteric liquid crystal cell comprises a first cholesteric liquid crystal reflecting circularly polarized light in said one state, and said second cholesteric liquid crystal cell comprises a second cholesteric liquid crystal reflecting circularly polarized light in an opposite state.

6. (Original) An optical switch/attenuator device comprising

a first sleeve having a central longitudinal channel and an end face;

first and second optical fibers fixed in said first sleeve channel, said first and second optical fibers each having end surfaces coincident with said first sleeve end face;

a first collimating GRIN lens having first and second end faces, said first end face proximate said first sleeve end face;

a second sleeve having a central longitudinal channel and an end face;

a third optical fiber fixed in said second sleeve channel, said third optical fiber having an end surface coincident with said second sleeve end face;

a second collimating GRIN lens having first and second end faces, said first end face proximate said second sleeve end face, said second end face directed toward said second face of said first GRIN lens;

a cholesteric liquid crystal cell unit between said second end faces of said first and second GRIN lenses, said cholesteric liquid crystal cell unit having

a first cholesteric liquid crystal cell receiving incident light from said first GRIN lens, said first cholesteric liquid crystal cell reflecting circularly polarized light of one state of said incident light or transmitting said incident light responsive to a control signal; and

a second cholesteric liquid crystal cell arranged with respect to said first cholesteric liquid crystal cell to receive light transmitted by said first cholesteric liquid crystal cell, said second cholesteric liquid crystal cell selected to reflect or transmit light from said first cholesteric liquid crystal cell responsive to said control signal when said first cholesteric liquid crystal cell reflects said circularly polarized light of said one state or transmits said incident light respectively;

said first and second sleeves, said first and second GRIN lenses, said cholesteric liquid crystal cell unit arranged and oriented with respect to each other so that light from said first optical fiber passes through, and back from, said first collimating GRIN lens, and said cholesteric liquid crystal cell unit into said second optical fiber when said cholesteric liquid crystal cell units reflects light responsive to said control signal, and light from said first optical fiber passes through said first collimating GRIN lens, said cholesteric liquid crystal cell unit, and said second collimating GRIN lens into said third optical fiber when said cholesteric liquid crystal cell units transmits light responsive to said control signal.

7. (Original) The optical switch/attenuator device of claim 6 further comprising a π-phase waveplate element between said first and second cholesteric liquid crystal cells.

8. (Original) The optical switch/attenuator device of claim 7 wherein said π-phase waveplate element comprises a third liquid crystal cell.

9. (Original) The optical switch/attenuator device of claim 7 wherein said π-phase waveplate element comprises a plate of birefringent crystal material.

10. (Original) The optical switch/attenuator device 6 wherein said first cholesteric liquid crystal cell comprises a first cholesteric liquid crystal reflecting circularly polarized light in said one state, and said second cholesteric liquid crystal cell comprises a second cholesteric liquid crystal reflecting circularly polarized light in an opposite state.

11. (Original) The optical switch/attenuator device of claim 6 further comprising

a fourth optical fiber fixed in said second sleeve channel, said fourth optical fiber having an end surface coincident with said second sleeve end face; and

wherein said first and second sleeves, said first and second GRIN lenses, said cholesteric liquid crystal cell unit arranged and oriented with respect to each other so that light from said fourth optical fiber passes through, and back from, said second collimating GRIN lens, and said cholesteric liquid crystal cell unit into said third optical fiber when said cholesteric liquid crystal cell units reflects light responsive to said control signal, and light from said fourth optical fiber passes through said second collimating GRIN lens, said cholesteric liquid crystal cell unit, and said first collimating GRIN lens into said second optical fiber when said cholesteric liquid crystal cell units transmits light responsive to said control signal.

12. (Original) The optical switch/attenuator device of claim 6 wherein said cholesteric liquid crystal cell unit reflects light responsive to a first control signal voltage and transmits light responsive to a second control signal voltage and proportionally transmits and reflects light responsive to control signal voltages intermediate said first and second control signal voltages.

13. (Original) A WDM add/drop multiplexer comprising

a first sleeve having a central longitudinal channel and an end face;

a network input optical fiber;

a network output optical fiber, said network input and output optical fibers fixed in said first sleeve channel and having end surfaces coincident with said first sleeve end face;

a first collimating GRIN lens having first and second end faces, said first end face proximate said first sleeve end face;

a second sleeve having a central longitudinal channel and an end face;

an add optical fiber;

a drop optical fiber, said add and drop optical fibers fixed in said second sleeve channel and having end surfaces coincident with said second sleeve end face;

a second collimating GRIN lens having first and second end faces, said first end face proximate said second sleeve end face, said second end face directed toward said second face of said first GRIN lens;

a wavelength-dependent filter proximate said second end face of said first collimating GRIN lens, said wavelength-dependent filter transmitting light at selected wavelengths and reflecting light at other wavelengths;

a cholesteric liquid crystal cell unit between said wavelength-dependent filter and said second end face of said second GRIN lenses, said cholesteric liquid crystal cell unit having

a first cholesteric liquid crystal cell receiving incident light from said first GRIN lens, said first cholesteric liquid crystal cell reflecting circularly polarized light of one state of said incident light or transmitting said incident light responsive to a control signal; and

a second cholesteric liquid crystal cell arranged with respect to said first cholesteric liquid crystal cell to receive light transmitted by said first cholesteric liquid crystal cell, said second cholesteric liquid crystal cell selected to reflect or transmit light from said first cholesteric liquid crystal cell responsive to said control signal when said first cholesteric liquid crystal cell reflects said circularly polarized light of said one state or transmits said incident light respectively;

said first and second sleeves, said first and second GRIN lenses, wavelength-dependent filter, and said cholesteric liquid crystal cell unit arranged and oriented with respect to each other so that light from said network input optical fiber at said other wavelengths passes through, and back from, said first collimating GRIN lens and said wavelength-dependent filter into said network output optical fiber, and so that that light from said network input optical fiber at said selected wavelengths passes through, and back from, said first collimating GRIN lens, said wavelength-dependent filter, and said cholesteric liquid crystal cell unit into said network output optical fiber when said cholesteric liquid crystal cell units reflects light responsive to said control signal, and so that light from said first optical fiber at said selected wavelengths passes through said first collimating GRIN lens, said cholesteric liquid crystal cell unit, and said second collimating GRIN lens into said drop optical fiber when said cholesteric liquid crystal cell units transmits light responsive to said control signal, and so that light from said add optical fiber at said selected wavelengths passes through said second collimating GRIN lens, said cholesteric

liquid crystal cell unit, said wavelength-dependent filter and said second collimating GRIN lens into said network output optical fiber when said cholesteric liquid crystal cell units transmits light responsive to said control signal.

14. (Original) The WDM add/drop multiplexer device of claim 13 further comprising a optical fiber loop having first and second end sections arranged and oriented in said first sleeve channel so that light from said network input optical fiber at said other wavelengths passes through, and back from, said first collimating GRIN lens and said wavelength-dependent filter into said first end section and passes from said second end section through, and back from, said first collimating GRIN lens and said wavelength-dependent filter into said network output optical fiber.

15. (Original) The WDM add/drop multiplexer device of claim 13 further comprising a π-phase waveplate element between said first and second cholesteric liquid crystal cells.

16. (Original) The WDM add/drop multiplexer device of claim 15 wherein said π-phase waveplate element comprises a third liquid crystal cell.

17. (Original) The WDM add/drop multiplexer device of claim 15 wherein said π-phase waveplate element comprises a plate of birefringent crystal material.

18. (Original) The WDM add/drop multiplexer device of claim 13 wherein said first cholesteric liquid crystal cell comprises a first cholesteric liquid crystal reflecting circularly polarized light in said one state, and said second cholesteric liquid crystal cell comprises a second cholesteric liquid crystal reflecting circularly polarized light in an opposite state.

Claims 19-43 (cancelled).